

STATE OF NEVADA

**BIENNIAL REPORT**

OF THE

**State Department of Agriculture**

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**For the Period  
July 1, 1934, to June 30, 1936, Inclusive**

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CARSON CITY, NEVADA

STATE PRINTING OFFICE - - JOE FARNSWORTH, SUPERINTENDENT

1936



# REPORT OF STATE DEPARTMENT OF AGRICULTURE

To His Excellency, HON. RICHARD KIRMAN, SR., Governor of Nevada.

SIR: In accordance with the provisions of chapter 172, Statutes of Nevada 1931, we herewith submit the first report of the State Department of Agriculture, same being the eleventh report of the State Board of Stock Commissioners, for the period from July 1, 1934, to June 30, 1936.

## PERSONNEL

### *Administrative—*

FRANK CALLAWAY, President.....	Currant, Nye County
H. F. DANGBERG, Vice President.....	Minden, Douglas County
H. H. CAZIER, Commissioner.....	Wells, Elko County
EDWARD RECORDS, Secretary and Executive Officer.....	Reno
LOUISE LEWERS, Associate Secretary.....	Reno
ARMENA FRITZ, Clerk.....	Reno

### *Division of Animal Industry—*

WARREN B. EARL, Director.....	Reno
F. E. HENDERSON, District Veterinarian.....	Elko
F. H. BAKER,* Veterinary Inspector.....	Gardnerville
W. H. HILTS,* Veterinary Inspector.....	Reno
WM. R. SMITH,* Veterinary Inspector.....	Las Vegas
JOE F. PERKINS,* District Brand Inspector.....	Overton
JOHN H. CONAWAY,* District Brand Inspector.....	Caliente
JOHN W. COLE,* District Brand Inspector.....	Pioche
FAY STEWART,* District Brand Inspector.....	Alamo

### *Division of Plant Industry—*

GEORGE G. SCHWEIS, Director.....	Reno
LEE M. BURGE, Supervising Inspector.....	Reno
P. A. LEEHENBAUER, Seed Analyst and Botanist.....	Reno
THOMAS BRADSHAW,* Weed Inspector.....	Reno
D. WINKELMAN,* Weed Inspector.....	Minden
C. W. JENSEN,* Weed Inspector.....	Ely
C. H. BURKE,† Deputy Quarantine Officer.....	Reno

## TAX LEVIES

At a regular meeting held on November 13, 1934, the Board set the special tax for the Stock Inspection Fund, in accord with section 2, chapter 153, Statutes of Nevada 1933, approved March 22, 1933, at two mills on the dollar for the year 1935. At a special meeting held on October 26, 1935, the Board again set the special tax for the Stock Inspection Fund at two mills on the dollar for the year 1936, under the provisions of chapter 37, Statutes of Nevada 1935.

\*On per diem basis. †Employed by Washoe County.

**ASSESSED VALUATION OF LIVESTOCK UNDER THE JURISDICTION  
OF THIS BOARD FOR THE YEARS 1934-1935**

(Figures from the Report of the Nevada Tax Commission. Figures for the year  
1936 not available at this date.)

	1934	1935
Stock cattle .....	\$3,503,841.00	\$2,954,712.00
Bulls .....	227,990.00	228,507.00
Milch cows .....	357,315.00	319,371.00
Horses (1,100 pounds and up).....	384,620.00	415,685.00
Work horses (under 1,100 pounds).....	76,765.00	72,025.00
Driving horses .....	32,660.00	12,020.00
Saddle horses .....	153,220.00	146,100.00
Stock horses .....	86,780.00	94,710.00
Stallions .....	9,630.00	11,385.00
Brood mares .....	5,700.00	8,340.00
Work mules .....	21,400.00	25,015.00
Stock mules .....	11,760.00	9,760.00
Jacks .....	500.00	900.00
Burros .....	3,750.00	3,370.00
Hogs (over 8 months).....	14,454.00	14,226.00
Pigs (under 8 months).....	6,209.00	6,939.00
Poultry .....	25,512.00	24,827.00
Foxes .....	490.00	560.00
<b>Total .....</b>	<b>\$4,922,596.00</b>	<b>\$4,348,452.00</b>

**NEW LEGISLATION**

The 1935 session of the Legislature passed several Acts of considerable importance to the Board.

Chapter 37, Statutes of Nevada 1935, increased the maximum amount of the special tax which might be levied by the Board for the Stock Inspection Fund from two to four mills on the dollar. This was a partial restoration of the original maximum rate of six mills established in 1915 which was reduced to two mills by the 1933 Legislature. So far it has not been necessary to increase the tax rate beyond two mills, but the ability to do so between sessions of the Legislature, should some emergency arise, is a most valuable safeguard for the protection of the livestock industry.

Chapter 47, Statutes of Nevada 1935, made an appropriation of \$10,000 from the General Fund for the Board's use in combating diseases of livestock communicable to human beings. This was a recognition by the Legislature of the growing importance of the public health angle in livestock disease control. This grant by the Legislature is much appreciated by the livestock industry which heretofore has borne all the expense incident to the protection of the public health against livestock diseases through the special tax levied on livestock only.

Chapter 98, Statutes of Nevada 1935, authorized the Board to conduct the many and varied activities with which it has been charged since its creation in 1915 under the name of the State Department of Agriculture. This adoption of the departmental designation, which is used in practically all the other States, has done much to simplify procedure and facilitate contacts with other State departments and the people of our own State.

**STATEMENT OF DISBURSEMENTS FROM THE STOCK  
INSPECTION FUND**

July 1, 1934, to June 30, 1936

	July 1, 1934, to June 30, 1935	July 1, 1935, to June 30, 1936	
Salaries and wages.....	\$9,134.64	\$8,304.75	
Railroad transportation .....	198.65	160.53	
Automobile transportation .....	2,237.84	2,463.79	
Subsistence .....	387.00	301.60	
Office rent .....	900.00	900.00	
Post office box rent .....	7.50	6.00	
Telegraph and telephone .....	265.48	227.13	
Postage and printing .....	296.78	249.96	
Freight and express .....	39.52	15.02	
Industrial insurance .....	158.37	130.00	
Surety bond premiums .....	16.32	20.00	
Fire and burglary insurance .....	.....	75.86	
Dues, U. S. Livestock Sanitary Association....	25.00	25.00	
Advertising—			
Estrays .....		32.40	
Brand inspection districts .....		105.50	
Tuberculosis indemnities .....	262.62		
Equipment and supplies .....	223.35	487.45	
Eartags (cattle) .....	277.00		
Hide and carcass stamps, etc. ....	10.00	43.12	
Totals .....	\$14,440.37	\$13,548.11	
Grand total .....			\$27,988.48

**Net Receipts from All Sources Other Than Tax Levies,**

July 1, 1934, to June 30, 1936

	July 1, 1934, to June 30, 1935	July 1, 1935, to June 30, 1936	
New brand recordings .....	\$246.00	\$374.00	
Brand transfers .....	38.00	131.00	
Brand rerecordings .....		2,129.00	
Milk inspection, city of Elko.....	240.00	240.00	
Livestock shipment inspections .....	279.75	235.40	
Miscellaneous sales and refunds .....	38.76	28.93	
Estray funds held in escrow for one year....	6.90	72.80	
Totals .....	\$849.41	\$3,211.13	
Grand total .....			4,060.54
Net expenditures from Stock Inspection Fund.....			\$23,927.94

**EXPENDITURES FROM STOCK COMMISSION SPECIAL FUND (Chapter  
47, Statutes of Nevada 1935) APPROPRIATION OF \$10,000 FROM  
GENERAL FUND FOR PERIOD FROM JULY 1, 1935, TO JUNE 30, 1937.**

	July 1, 1935, to June 30, 1936
Salaries and wages.....	\$2,727.00
Automobile transportation .....	180.90
Subsistence .....	17.05
Freight and express .....	53.27
Industrial insurance .....	34.13
Tuberculosis indemnities .....	644.31
Equipment (eartags, etc.) .....	644.92
Total .....	\$4,301.58

**HELD IN BANK IN ESCROW**

Balance in Estray Fund—1 year estray escrow .....	\$70.60
Deposits for hide and carcass stamping outfit .....	243.00
Total .....	<u>\$313.60</u>

**EXPENDITURES FOR SUPPORT OF INSECT AND PLANT PEST QUARANTINE AND CONTROL (Chapter 280, Statutes of Nevada 1913; Chapter 134, Statutes of Nevada 1927; Sections 426-448, Nevada Compiled Laws 1929) FROM BALANCE OF APPROPRIATION OF \$8,400 FROM GENERAL FUND COVERING PERIOD FROM JULY 1, 1933, TO JUNE 30, 1935, AND \$8,400 APPROPRIATION FROM GENERAL FUND COVERING PERIOD FROM JULY 1, 1935, TO JUNE 30, 1937.**

	July 1, 1934, to June 30, 1935	July 1, 1935, to June 30, 1936
Salaries and wages .....	\$2,978.32	\$2,714.50
Railroad transportation .....	226.30	38.11
Automobile transportation .....	589.92	304.03
Subsistence .....	251.10	226.20
Office rent .....	300.00	375.00
Telegraph and telephone .....	38.93	106.28
Postage and printing .....	35.48	94.87
Freight and express .....	42	
Industrial insurance .....	48.53	50.02
Dues in Western Plant Quarantine Board and National Association of Secretaries, Commis- sioners and Departments of Agriculture.....	44.00	45.00
Equipment and supplies .....	45.44	69.79
Totals .....	<u>\$4,558.44</u>	<u>\$4,023.80</u>
Unexpended balance reverted June 30, 1935.....	\$113.56	

**EXPENDITURES FOR ALFALFA WEEVIL CONTROL (Chapter 100, Statutes of Nevada 1927) FROM BIENNIAL APPROPRIATION OF \$2,500 FROM GENERAL FUND COVERING PERIOD FROM JULY 1, 1935, TO JUNE 30, 1937.**

	July 1, 1935, to June 30, 1936
Salaries and wages .....	\$666.67
Railroad transportation .....	10.20
Automobile transportation .....	1,181.11
Subsistence .....	482.70
Telegraph and telephone .....	20.42
Industrial insurance .....	15.00
Equipment and supplies .....	14.00
Total .....	<u>\$2,390.10</u>

No appropriation made for period from July 1, 1933, to June 30, 1935.

**EXPENDITURES FOR NOXIOUS WEED CONTROL (Chapter 174, Statutes of Nevada 1929, Sections 414-435, Nevada Compiled Laws 1929) FROM ANNUAL APPROPRIATION OF \$4,000 FROM THE GENERAL FUND FOR PERIOD JULY 1, 1934, TO JUNE 30, 1936, AND UNEXPENDED BALANCES.**

	July 1, 1934, to June 30, 1935	July 1, 1935, to June 30, 1936
Salaries and wages .....	\$2,406.55	\$2,239.81
Railroad transportation .....	1.04	97.39
Automobile transportation .....	856.27	941.35
Subsistence .....	330.82	408.94
Office rent .....	225.00	225.00
Telegraph and telephone .....	9.77	24.07
Postage and printing .....	5.50	14.68
Freight and express .....		1.77
Industrial insurance .....	41.72	34.68
Equipment and supplies .....	52.22	12.31
<b>Totals .....</b>	<b>\$3,928.89</b>	<b>\$4,000.00</b>
Unexpended balance reverted June 30, 1935.....	\$71.11	

**EXPENDITURES FOR AGRICULTURAL SEED CONTROL (Chapter 203, Statutes of Nevada 1929, Sections 398-413, Nevada Compiled Laws 1929) FROM ANNUAL APPROPRIATION OF \$2,000 FROM THE GENERAL FUND COVERING PERIOD FROM JULY 1, 1934, TO JUNE 30, 1936, AND UNEXPENDED BALANCES.**

	July 1, 1934, to June 30, 1935	July 1, 1935, to June 30, 1936
Salaries and wages .....	\$1,758.34	\$1,616.67
Automobile transportation .....	20.47	193.36
Subsistence .....	.60	46.20
Office rent .....	150.00	150.00
Telegraph and telephone .....		7.30
Postage and printing .....	26.00	
Industrial insurance .....	31.96	24.67
Dues, Association of Official Seed Analysts of North America.....	10.00	20.00
Equipment and supplies .....	31.45	20.91
<b>Totals .....</b>	<b>\$2,028.82</b>	<b>\$2,079.11</b>
Unexpended balance reverted June 30, 1935.....	\$18.58	

**Net Receipts from All Sources Other than Appropriation**

	July 1, 1934, to June 30, 1935	July 1, 1935, to June 30, 1936
Analysis of seed fees .....	\$45.25	\$2.00
Sales tags .....	2.15	
<b>Totals .....</b>	<b>\$47.40</b>	<b>\$2.00</b>

**EXPENDITURES FOR GRADING AND STANDARDIZATION OF AGRICULTURAL PRODUCTS (Chapter 225, Statutes of Nevada 1931) FROM \$2,000 ANNUAL APPROPRIATION FROM GENERAL FUND FOR PERIOD FROM JULY 1, 1934, TO JUNE 30, 1936.**

	July 1, 1934, to June 30, 1935	July 1, 1935, to June 30, 1936
Salaries and wages .....	\$1,464.43	\$1,743.22
Railroad transportation .....	49.24	
Automobile transportation .....	470.67	134.22
Subsistence .....	117.45	61.45
Office rent .....	225.00	150.00
Telegraph and telephone .....	61.04	
Postage and printing .....	15.00	.60
Freight and express .....	7.33	
Industrial insurance .....	29.29	29.92
Equipment and supplies .....	156.61	68.70
<b>Totals .....</b>	<b>\$2,596.06</b>	<b>\$2,188.11</b>
Unexpended balance reverted June 30, 1935.....	\$69.81	
Unexpended balance June 30, 1936.....		\$5.94

**Net Receipts from All Sources Other than Appropriation**

	July 1, 1934, to June 30, 1935	July 1, 1935, to June 30, 1936
Grading fees collected .....	\$665.87	\$194.05

**EXPENDITURES FOR GRADING AND STANDARDIZATION OF EGGS (Chapter 220, Statutes of Nevada 1931) FROM \$1,200 BIENNIAL APPROPRIATION FROM GENERAL FUND FOR PERIOD FROM JULY 1, 1935, TO JUNE 30, 1937.**

No appropriation for biennium July 1, 1933, to June 30, 1935.

No expenditures for period July 1, 1935, to June 30, 1936.

**RECOMMENDATIONS**

We have little to offer in the way of definite recommendations at this time other than those of a technical nature covered in the appended reports of the Divisions of Animal Industry and Plant Industry.

We would recommend that the plan of appropriating some money from the General Fund for the use of the Division of Animal Industry in combating diseases of livestock communicable to human beings inaugurated by the last Legislature be continued. This would seem no more than equitable as the safeguarding of the public health is vital to all our people and they should share the cost rather than leaving the whole burden to be borne by the livestock industry through the special tax on livestock alone. The amount of these appropriations would naturally be governed by conditions, but they would not need to be large.

We would most strongly recommend some more flexible system of financing the activities of the Division of Plant Industry. While the gross amount of the funds available under the present system has proved on the whole adequate, they are derived from six separate and distinct continuing or special appropriations each limited to a definite and narrow line of activity. On the other hand, it is obviously impossible to predict in advance which line of work conducted by this Division will be most active during any one biennial period. This is

governed by climatic conditions, insect life and trade conditions which are constantly and often rapidly changing. We would urge, therefore, that the present system of financing be abandoned and replaced by a lump-sum appropriation for the support of this Division, to be expended in the discretion of the Board in accord with actual conditions as they arise.

#### CONCLUSION

There are appended hereto the reports of the Divisions of Animal Industry and Plant Industry prepared by the respective Directors of same. These cover, we believe, in sufficient detail the work of the past two years and the results accomplished.

In conclusion we wish to extend our thanks to our own personnel, the cooperating organizations and individuals, and the public at large, whose assistance and cooperation have made these results possible.

Respectfully submitted,

FRANK CALLAWAY,

H. F. DANGBERG,

H. H. CAZIER,

*Commissioners.*

EDWARD RECORDS, *Executive Officer.*

## DIVISION OF ANIMAL INDUSTRY

WARREN B. EARL, *Director*

A brief review of the more important activities of the division for the period from July 1, 1934, to June, 30, 1936, follows:

### BRAND RECORDINGS

The recording of brands has continued in the regular manner, and, in addition, a rerecording period has occurred during the past biennium. This period closed December 31, 1935, and brands now of record will so remain until December 31, 1940. The brand figures are as follows:

Total number of brands of legal record July 1, 1934.....	2,405
New brands recorded and brands restored to record, July 1, 1934, to June 30, 1936.....	297
Brands rerecorded at close of rerecording period ending December 31, 1935.....	2,132
Brands lost at close of above rerecording period.....	395
Brands transferred from one owner to another.....	131
Total brands of legal record June 30, 1936.....	2,307

### BRAND BOOK

The ownership of brands having reverted to a more or less stable basis, following a period of unusual activity in transfers and emergency recordings, due to disturbed financial conditions, it was deemed desirable to issue a new and up-to-date brand book. The Nevada Brand Book of 1936, containing a transcript of all brands of legal record July 1, 1936, was accordingly published.

The policy of revising the State brand book shortly after the end of rerecording periods appears to be the best means of keeping the book up-to-date for a reasonable length of time and will be followed.

Supplements will be prepared between regular series of the book if the number of new brands justify their publication.

### STOCK KILLED ON RAILROAD RIGHTS OF WAY

Reports received during the period July 1, 1934, to June 30, 1936, under the provisions of sections 6345-6355 Nevada Compiled Laws 1929, show the following livestock killed on railroad rights of way:

	Cattle	Hogs	Horses	Sheep	Total
<i>Western Pacific</i> —					
Brands or owners reported.....	101	....	4	4	109
Brands or owners not reported.....	24	....	3	12	39
<i>Southern Pacific</i> —					
Brands or owners reported.....	116	....	....	....	116
Brands or owners not reported.....	5	1	....	....	6
<i>Union Pacific</i> —					
Brands or owners reported.....	127	....	9	3	139
Brands or owners not reported.....	11	....	3	....	14
<i>Nevada Northern</i> —					
Brands or owners reported.....	5	....	....	....	5
Brands or owners not reported.....	9	....	....	3	12
Totals .....	398	1	19	22	440

**ESTRAYS**

The handling of estrays has continued with less misunderstanding and friction than formerly, due to a better understanding of the conditions under which estrays are taken up and disposed of, and to less confusion between estrays and animals of known ownership trespassing on the property of others or running on public property.

The actual figures covering estrays handled during the past biennium are as follows:

<i>Cattle</i> —		
Taken up as estrays.....	15	
Returned to owners .....	10	
Sold .....	4	
Escaped .....	1	
<i>Horses</i> —		
Taken up as estrays.....	18	
Returned to owners .....	10	
Sold .....	5	
Reclaimed by owners after sale.....	1	
Escaped .....	2	—
Total animals handled for period July 1, 1934, to June 30, 1936 .....		33
<i>Last Biennium</i> —		
Cattle .....	27	
Horses .....	8	35
Decrease in cattle as compared with 1934-1935.....	12	
Increase in horses as compared with 1934-1935.....	10	
Total decrease in animals handled.....		2

**SLAUGHTERHOUSE INSPECTION**

There has been little activity in this form of inspection during the past two years. Municipal inspection in Reno, Yerington, Fallon, and Las Vegas, and inspection at Gardnerville under a Douglas County ordinance, previously reported, has been maintained, and there appears to be a growing tendency toward small-scale slaughtering being done in central plants on a fee basis. Further development of this method will decrease the number of small plants where animals have been slaughtered under somewhat insanitary conditions, and in the meantime a reasonable attitude will be maintained towards small slaughterhouses in remote areas, unless grossly insanitary conditions are found to exist.

**HIDE AND CARCASS INSPECTION**

Hide and carcass inspection has been continued in the manner outlined in previous reports.

An effort has been made to keep this work in the hands of the sheriffs, deputies and other peace officers insofar as possible and excellent cooperation has been maintained between them and this department. In a few cases where peace officers are not available, appointments have been placed in other hands. The force now consists of 87 inspectors.

During the past biennium an effort has been made to make a personal contact with as many inspectors as possible, and the majority of the men have been interviewed and their equipment and records

inspected. In nearly all cases, inspection was being properly performed and only a few changes in personnel were necessary.

In some districts a check of trucks from which meat is peddled has been made through the courtesy of the State Highway Patrol, and no gross violations of the Act have been discovered by this means or otherwise.

Inspectors' record books have in a few cases been used as evidence in court during the past two years.

It is believed that the benefits derived from hide and carcass inspection justifies its continuance.

#### BRAND INSPECTION

Following the passage of the Brand Inspection District Act in 1929, only one brand inspection district was created under its provisions for a considerable length of time. This district consisted of Clark County and that part of Lincoln County situated south of an east and west line passing through Leith.

In 1935 a group of stockmen in Lincoln County made application to have the entire territory of Lincoln County made a separate brand inspection district, and accordingly under date of August 17, 1935, the Board created two brand inspection districts, one consisting of Clark County and the other of Lincoln County.

Many stockmen are of the opinion that a more comprehensive system of brand inspection of Nevada cattle in public stockyards to which they have been shipped for slaughter should be developed, and during the coming biennium this Division will cooperate with and assist the Nevada State Cattle Association in working out this problem.

#### DISEASES OF LIVESTOCK

The State of Nevada has continued to remain free of epidemics of the group of diseases resulting in the death of large numbers of animals and great economic loss, and those in which the restrictions of rigid quarantine are necessary. Possibly the greatest livestock loss is that of horses from encephalomyelitis, or brain fever.

The group of diseases controllable by immunization has been handled in the same manner as heretofore, the activities of this Division being along the line of directing the efforts of stockmen and giving practitioners the benefit of knowledge gained by past experience of our staff.

There have been noteworthy improvements in vaccines and serums in protective qualities as well as a decrease in cost, and an effort has been made to keep the users of these products informed regarding changes.

Among the conditions which warrant investigation during the coming biennium is the liver fluke situation, reports from abattoirs indicating a large number of condemnations of livers of Nevada cattle on account of this disease.

The eradication of such diseases as tuberculosis and Bang's disease by routine testing with the cooperation of the U. S. Bureau of Animal Industry has continued in a satisfactory manner. The reaccreditation of all counties as modified tuberculosis-free accredited areas has been completed and sufficient testing will be continued to keep the State permanently classified as modified free area.

The cooperation of the Federal Government with the generous allotment of funds for the expense of testing and payment of indemnities has made great progress in Bang's disease control possible.

Special comment on the more common diseases, as well as tabulated reports of testing, are given elsewhere in this report.

#### ENCEPHALOMYELITIS

This disease, which is also known as brain fever, was first mentioned in this series of reports in 1934. Since then isolated cases and small epidemics have continued to occur.

The control of this disease still remains to a large extent an investigational problem, and the activities of this division have therefore been in the nature of cooperation with the Agricultural Experiment Station and State Veterinary Control Service of the University of Nevada.

A curative serum is available which in many cases saves the lives of horses if given early in the disease. This serum also is administered to exposed horses and produces a passive immunity of short duration.

Considerable research leading to the development of a preventive vaccine is being conducted, and there is every reason to hope that a practical method of immunizing horses against this disease will be developed in the near future. In the meantime, persons living in sections where the disease has appeared within the past few years should understand that their animals have a certain degree of immunity from exposure.

#### BACILLARY HEMOGLOBINURIA

This disease, commonly called red water, continues to appear here and there, notwithstanding the fact that it may be prevented by vaccination. The period of immunity conferred by vaccines in this disease is comparatively short, however, and it is believed that some losses occur because stockmen are not acquainted with this fact, and do not follow vaccination often enough to keep their stock immune.

The curative serum for use in animals sick with this disease is successful, especially if given early in the course of the disease, and is used with good results, particularly in dairy cows, where the disease may be detected soon after infection. This serum is no longer available from commercial laboratories, but the Department of Veterinary Science of the University of Nevada has resumed its production and it will be available there in the early fall of 1936.

#### HOG CHOLERA

Immunization against hog cholera has been recommended and generally followed in garbage-feeding plants, and the disease has not caused many losses in these establishments. A few plants where garbage has been fed for the first time by owners not familiar with this source of cholera infection have suffered considerable loss.

Feeding plants where routine immunization with serum and virus is practiced have been kept under quarantine, and the excellent cooperation given by the owners in observing the restrictions of quarantine, in practically all cases, has prevented the spread of hog cholera from feeding plants to hogs kept under regular ranch conditions.

This department does not intend to recede from its position taken years ago of controlling hog cholera by sanitation and quarantine and by discouraging unnecessary and promiscuous vaccination. The comparative freedom of the State from the disease has justified this position. Reports from sources outside the State show a tendency towards this method of control, and veterinary literature calls attention to the belief among an increasing number of livestock sanitary officials that the use of hog cholera virus will have to be restricted, or perhaps eventually discontinued, before the disease can be eradicated.

#### BLACKLEG

Although blackleg is one of the better understood diseases and its prevention comparatively easy, it continues to appear from time to time in all sections of the State and causes considerable loss.

Stockmen are, in the case of this disease, possibly more than any other, prone to neglect the immunization of their stock until a few cases have developed, instead of following systematic control measures anticipating the blackleg season, which is generally known to most stockmen.

Although generally believed to be a disease of young stock, older cattle may develop blackleg if raised in a noninfected area where there is no opportunity for them to become self-immunized during calfhood. There is, therefore, reason to believe that stockmen occasionally fail to recognize or report cases of blackleg in cattle beyond the age in which they would be susceptible to the disease under ordinary conditions of herd management and exposure.

New immunizing agents against blackleg have been developed during the past few years, and there is a tendency at present to discontinue products of the aggressin group in favor of the bacterin and blacklegol types.

#### ANTHRAX

The control of anthrax is no longer a serious problem and has not been a subject of much interest during the past two years.

The areas where this disease may be expected to appear have been rather definitely determined, and systematic vaccination has protected the livestock in these sections. No outbreaks of the disease have been reported from new or doubtful areas.

An unseasonal outbreak of anthrax occurred in the Humboldt Valley, a short distance west of Elko, in January 1935, during a sudden thaw following very cold weather. This outbreak was confined to one ranch. A few cases of the disease occurred in the Truckee Meadows near Reno in March 1935, much earlier in the season than anthrax usually occurs. Both of these areas are considered anthrax districts, but have been comparatively free of the disease during the past decade.

There are certain valleys which are considered dangerous areas, but under ordinary conditions of herd management cattle are on summer range during the anthrax season and are not returned to the infected ground until fall, when the danger is usually over.

#### DOURINE

This disease was first diagnosed in Nevada in 1929. Efforts to eradicate it were abandoned due to failure to establish a proper

cooperative arrangement between the State, the adjoining States, and the U. S. Bureau of Animal Industry, and to the lack of adequate laws controlling the range and, in part, to the low value of horses. The steadily increasing demand for horses and the advance in prices appear to justify the resumption of control measures, probably within the coming biennium. The regulation of the State of California requiring that mares and stallions pass a negative blood test for dourine before being shipped into that State from Nevada is still in effect.

#### SCABIES

Scabies in any form has not been found in Nevada during the past two years. Veterinarians are observing the utmost vigilance in order that no case may go undetected. All cattle shipped into the State are inspected for infection at or reasonably soon after arrival. Systematic inspections have been made in the areas where the disease last occurred, and inspectors looking over cattle for any purpose whatsoever, always keep in mind the possibility of this parasitic infestation. The numbers of cattle inspected are shown in tabulated form elsewhere in this report.

#### RABIES

Rabies has not been a cause of concern during the past biennium, either as a menace to the public health, or as an economic loss of horses and cattle. Cases occur, however, throughout the State, and sanitary officials are constantly alert to prevent the development of outbreaks of this disease. Adequate biological products are now available for preventing the development of rabies in the larger animals which may be bitten by rabid predatory animals.

#### TUBERCULOSIS

Tuberculosis eradication, leading to the declaration of the entire State of Nevada as modified tuberculosis-free accredited area, having been completed in the period covered by the last previous report of this department, it has been necessary during the past two years to conduct only such tuberculin testing of cattle as is necessary to maintain the accredited status of the State.

Retesting has been followed extensively in herds of dairy cows, particularly in areas where it was considered essential to the public health. Sufficient retesting in beef and range cattle has been done to comply with the regulations for reaccreditation and to reasonably assure the comparative freedom of the cattle of the State from the disease.

A few reactors to the tuberculin test were found in some of our largest herds, necessitating complete tests of these herds, but it is not anticipated that their experience will be repeated.

While stockmen believe that an unnecessarily large volume of testing has been done, it has not been the policy of this organization to do only the minimum testing required by regulations, but to remove every possible source of infection, and to create an area which is in fact tuberculosis free.

The progress in tuberculosis eradication throughout the United States has been rapid, and forty States are now accredited. The

extent of territory from which cattle may be brought into Nevada with only limited restrictions, and with comparative safety, is therefore greatly increased; only two States west of the Mississippi River still remaining among those not accredited.

Statistical data covering tuberculosis eradication follow:

County	Declared modified, tuberculosis-free area	Reaccredited	Expiration date
Churchill.....	February 1, 1931	July 1, 1935	July 1, 1938
Clark.....	March 1, 1932	April 1, 1936	April 1, 1939
Douglas.....	March 1, 1930	July 1, 1936	July 1, 1939
Elko.....	March 1, 1933	July 1, 1936	July 1, 1939
Esmeralda.....	May 2, 1932	March 1, 1936	March 1, 1939
Eureka.....	March 1, 1933	July 1, 1936	July 1, 1939
Humboldt.....	February 1, 1932	March 1, 1936	March 1, 1939
Lander.....	May 2, 1932	March 1, 1936	March 1, 1939
Lincoln.....	May 2, 1932	April 1, 1936	April 1, 1939
Lyon.....	March 1, 1930	February 1, 1934	February 1, 1937
Mineral.....	February 1, 1931	March 1, 1934	March 1, 1937
Nye.....	May 2, 1932	April 1, 1936	April 1, 1939
Ormsby.....	March 1, 1930	September 1, 1933	September 1, 1936
Pershing.....	May 1, 1931	July 1, 1935	July 1, 1938
Storey.....	February 1, 1931	March 1, 1934	March 1, 1937
Washoe.....	May 1, 1931	July 1, 1936	July 1, 1939
White Pine.....	May 2, 1932	March 1, 1936	March 1, 1939

A summary by years, since the work was started in 1919, of cattle tested and reactors found, shows the following:

Year	Cattle tested	Reactors	Percentage of reactors
1919.....	5,520	467	8.45
1920.....	12,475	427	3.42
1921.....	10,420	313	3.00
1922.....	11,127	287	2.56
1923.....	15,419	183	1.18
1924.....	16,812	103	.61
1925.....	11,441	149	1.30
1926.....	12,853	96	.74
1927.....	17,532	117	.60
1928.....	20,435	224	1.70
1929.....	30,425	97	.31
1930.....	33,950	95	.28
1931.....	13,099	21	.16
1932.....	23,825	32	.13
1933.....	23,179	55	.24
1934.....	6,915	37	.52
1935.....	34,603	80	.23
1936 (January 1 to June 30).....	24,386	34	.13

#### BANG'S DISEASE

The eradication of Bang's disease under the Federal plan and as a cooperative effort by this division and the U. S. Bureau of Animal Industry has been the major routine disease-control project during the past biennium.

As predicted in the last previous report, plans were perfected in 1934 for testing of cattle on a large scale by the U. S. Department of Agriculture in cooperation with the livestock sanitary organizations of the States, and an appropriation was made by Congress for this purpose, an allotment of \$80,000 being made to Nevada.

The indemnity available under this plan for payment for infected cattle made control measures possible for many owners who had previously felt that they could not afford to have their herds tested under the State plan, with possible loss of cattle without indemnity.

The removal of the gross infection represented by the large number of reactor cattle found and destroyed will be of great value in

the industry, even though it is not known at the present time if the plans of the U. S. Department of Agriculture will make possible the following up of the work indefinitely. Some arrangement will be made, however, to prevent loss of the ground thus far gained in the eradication of this disease.

A considerable number of herds, particularly those showing little or no infection at the first test, were tested under the Federal plan in such a manner that they became eligible for accreditation as Bang's disease-free herds under the State plan, and are now accredited herds. Testing will be continued under the State plan in these herds in order that accreditation may be maintained.

The percentage of infection has been found to be so low in certain counties that it appears practical to establish these sections as modified Bang's disease-free areas, and, with the approval of livestock owners concerned, the necessary quarantine action to protect these areas from the entry of infected cattle will probably be taken during the coming biennium. Starting with one or two counties, the movement may be extended to the entire State as soon as local conditions make it feasible.

Data concerning cattle tested, number of reactors, indemnity, etc., are shown in the following tables:

TABLE SHOWING DATA CONCERNING CATTLE TESTED, NUMBER OF REACTORS, INDEMNITY, ETC.

Counties	FIRST TEST				SECOND TEST				THIRD TEST						
	Accredited herds	Herds involved	Negative	Suspect	Reactors	Herds having reactors	Negative	Suspect	Reactors	Herds having reactors	Negative	Suspect	Reactors	Herds having reactors	
Churchill	30	132	2,214	130	437	64	1,145	50	43	17	404	28	12	4	
Clark	.....	201	1,870	84	303	94	1,066	36	9	3	407	20	9	2	
Douglas	.....	42	1,951	81	771	22	681	43	22	11	130	13	17	4	
Elko	.....	20	841	76	114	15	384	24	17	5	122	9	5	1	
Owyhee	.....	215	1,696	120	286	129	.....	.....	.....	.....	.....	.....	.....	.....	
Eureka	.....	1	39	3	17	1	34	2	.....	.....	.....	.....	.....	.....	
Humboldt	.....	1	48	2	10	1	.....	.....	.....	.....	.....	.....	.....	.....	
Lander	.....	4	683	30	101	3	487	12	24	2	328	8	1	1	
Lincoln*	.....	114	640	10	6	2	445	12	8	2	32	1	.....	.....	
Lyon	.....	9	1,746	606	262	36	888	22	13	7	261	16	1	1	
Mineral	.....	1	10	.....	2	1	.....	.....	.....	.....	.....	.....	.....	.....	
Nye	.....	1	19	2	1	1	.....	.....	.....	.....	.....	.....	.....	.....	
Ormsby	.....	3	280	19	27	4	139	9	.....	.....	.....	.....	.....	.....	
Pershing	.....	1	55	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Washoe	.....	2	4,440	215	402	68	1,983	135	61	19	418	15	18	5	
White Pine	.....	17	475	50	108	16	539	28	27	10	272	35	10	3	
Totals	.....	66	1,038	15,907	1,430	2,037	7,791	373	224	76	83	2,454	150	74	22

\*Individual herd accreditation not shown for these counties, as area accreditation is contemplated.

TABLE SHOWING DATA CONCERNING CATTLE TESTED, NUMBER OF REACTORS, INDEMNITY, ETC.—Continued

Counties	FOURTH TEST			FIFTH TEST			Salvage	United States indemnity
	Herds involved	ANIMALS	Reactors	Herds having reactors	ANIMALS	Reactors		
Churchill	3	46	3	.....	.....	.....	\$12,645.65	\$10,668.95
Clark*	2	112	2	.....	.....	.....	4,005.90	2,478.81
Douglas	.....	.....	.....	.....	.....	.....	5,881.00	3,836.00
Elko	1	26	1	.....	.....	.....	1,764.00	2,232.00
Owyhee	.....	.....	.....	.....	.....	.....	3,820.23	3,249.79
Eureka	.....	.....	.....	.....	.....	.....	262.60	299.00
Humboldt	.....	.....	.....	.....	.....	.....	180.00	190.00
Lander	.....	.....	.....	.....	.....	.....	2,333.34	2,124.88
Lincoln*	3	113	1	1	90	1	121.95	1,356.00
Mineral	.....	.....	.....	.....	.....	.....	5,097.31	5,118.32
Nye	.....	.....	.....	.....	.....	.....	50.50	38.50
Ormsby	1	39	5	1	52	1	18.00	20.00
Pershing	.....	.....	.....	.....	.....	.....	370.00	132.50
Washoe	1	53	1	1	44	.....	14,122.42	9,551.85
White Pine	1	87	1	.....	.....	.....	2,697.76	2,889.33
Totals	12	476	13	4	186	2	\$53,418.76	\$43,362.93

Individual herd accreditation not shown for these counties, as area accreditation is contemplated.

Mastitis, although a distinct disease, is frequently associated with Bang's disease, and, as funds were available for indemnifying owners for cows found on clinical examination to be affected, veterinarians made examinations of herds for this purpose in connection with Bang's disease testing, and a comparatively small number of animals were condemned, removed from herds, and slaughtered.

Data concerning these examinations follow:

Cattle examined for evidence of mastitis.....	966
Herds represented.....	29
Animals showing no evidence of mastitis.....	875
Animals showing marked physical evidence of mastitis.....	64
Suspects.....	27
Herds showing mastitis.....	21

**SUMMARY OF LIVESTOCK DISEASE CONTROL WORK PERFORMED IN THE STATE BY THE UNITED STATES BUREAU OF ANIMAL INDUSTRY, STATE DEPARTMENT OF AGRICULTURE AND ACCREDITED VETERINARIANS COOPERATING, FOR THE PERIOD JULY 1, 1934, TO JUNE 30, 1936:**

Miscellaneous field investigations.....	229
Autopsies, including reactors to tuberculin tests.....	229 head
Scabies control work—cattle inspections.....	71,533 head

**Immunization and Treatment by the Use of Biologic Products**

Anthrax, cattle.....	547 head
Bacillary hemoglobinuria, cattle, 3 herds.....	2,420 head
Encephalomyelitis, horses.....	99 head
Hemorrhagic septicemia—	
Calves.....	40 head
Hogs.....	140 head
Hog cholera, 89 herds.....	2,675 head
Rabies, dogs.....	7 head

**Biologic Tests Applied in the Field**

Johne's disease tests, cattle.....	1 head
Lymphangitis, found in connection with tuberculin tests, cattle....	10 head
Tuberculin tests of cattle—	
Incident to tuberculosis eradication.....	58,621 head
At destination on in-shipped cattle.....	48 head
On out-bound cattle.....	299 head
Combined intradermal and ophthalmic tests.....	119 head
Total animals tested.....	59,087 head
Total tests applied.....	59,206 head
Total herds involved.....	2,145 head
Total reactors found.....	114 head
Total herds showing reactors.....	34

**Blood Specimens Collected for Laboratory Examinations**

**Bang's disease—**

Blood specimens collected by the State and Accredited Veterinarians, other than under Federal plan, for eradication of:

**Cattle—**

First test.....	76 head
Second test.....	114 head
Fourth test.....	185 head
Fifth test.....	162 head
Thirteenth test.....	71 head
Fourteenth test.....	85 head
Sixteenth test.....	90 head
Seventeenth test.....	73 head
Eighteenth test.....	72 head
Special tests.....	178 head

Annual tests for reaccreditation of herds—	
First.....	127 head
Second.....	306 head
Third.....	231 head
Fourth.....	64 head
Restoration of accreditation—	
First test.....	20 head
Second test.....	19 head
	1,873 head
(For tests made under Federal Plan see under special heading)	
Brucella abortus—	
Blood specimens for test—	
Horses.....	81 head
Swine.....	19 head
Goats.....	2 head
Dourine—	
Horses—	
Negative.....	400 head
Dourine.....	1 head

### INTERSTATE MOVEMENTS OF LIVESTOCK

July 1, 1934, to June 30, 1936

Shipments out of Nevada, including only movements covered by official health certificates, and do not include cattle feeding in transit:

Cattle.....	3,036 head
Horses shipped for immediate slaughter.....	470 head
Horses shipped for purposes other than slaughter.....	1,766 head
Hogs.....	80 head

Shipments from Brand Inspection Districts of Clark and Lincoln Counties—

Cattle.....	2,435 head
Horses shipped for immediate slaughter.....	60 head
Horses shipped for purposes other than slaughter..	100 head

Total animals outbound..... 7,947 head

Inspected by Department on behalf of Sheep Commission—

Sheep outbound.....	20,389 head
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Shipments into Nevada, including animals entering legally on health certificates or permits. These figures are approximate as carload lots are counted as 30 head to the car. It is understood that occasional shipments arrive in the State without permit or health certificate, moving by truck or being trailed. In all cases effort is made to have a record of all dairy or breeding cattle arriving in Nevada:

Cattle entering on health certificates or permits not including cattle on permits for immediate slaughter*.....	22,341 head
Cattle entering on permits for immediate slaughter.....	3,332 head
Horses entering on health certificates*.....	69 head

Total animals inbound..... 25,742 head

\*Five cars of cattle and horses for rodeo purposes not included.

### QUARANTINE REGULATIONS

No new quarantine regulations have been issued during the past two years and the conditions under which livestock may be imported into Nevada remain unchanged.

It is not anticipated that any important changes along this line will be necessary during the coming biennium. It is possible that certain counties may be quarantined against the importation of cattle which are not Bang's disease free, as referred to above under report of this

disease, but not sufficient progress has been made in Bang's disease eradication to justify such a restriction being placed on the entire State.

The Nevada quarantine on horses on account of dourine, covering certain areas in the northeastern part of the State, is still in force, as is the embargo of the State of California against Nevada horses, requiring a blood test for dourine of stallions and mares for entry from Nevada into California.

Hog-feeding plants where immunization against hog cholera is practiced have been kept under quarantine, and a few ranches have been under quarantine for short periods on account of this disease.

Excellent cooperation has been obtained in the few cases where quarantine or veterinary police has been necessary, and no recourse to legal action has been necessary.

#### ACKNOWLEDGMENTS

The Division of Animal Industry desires to express its appreciation of the assistance it has received from various cooperating groups and organizations.

The Bureau of Animal Industry, United States Department of Agriculture, has been, during the past biennium, in position to conduct activities of greater value to the State than perhaps at any time in the past, due to special appropriation of funds by Congress for this purpose.

Particular appreciation is expressed for the continued cooperation given in maintaining the modified tuberculosis-free accredited area status of the State, and for the comprehensive testing program in Bang's disease, which has given the State a start in the eradication of this disease which would not have been possible for a long time without assistance.

Dr. R. A. Given was made Inspector in Charge of the Station of the U. S. Bureau of Animal Industry at Reno, Nevada, during the past biennium. This division expresses its thanks for the spirit of cooperation shown by him at all times, and to him and the members of his staff for the capable manner in which they have handled their duties.

Active cooperation has been maintained with the Farm Bureau dairy and livestock groups and with the Nevada State Cattle Association.

To the large number of State and county officials who have cooperated with and assisted this division, thanks are extended.

## DIVISION OF PLANT INDUSTRY

GEORGE G. SCHWEIS, *Director*

The activities of the Division of Plant Industry fall under several heads, namely, the general administration of quarantine orders and regulations; the enforcement of the pure seed law; the regulations for the interstate shipment of nursery stock and other plants and plant products for propagation; the control and eradication of insect pests and plant diseases; noxious weed control; the regulations covering the entry of bees and used apiary equipment; and the standardization and grading of agricultural products.

The division has functioned actively in all these lines during the past biennium, although in some portions of the State the degree of activity was not as great as in other portions owing to press of emergency work and lack of adequate funds. Mormon cricket control in eastern and central Nevada was the major new or unusual activity during the years 1935 and 1936.

In carrying on its various lines of work, the division cooperated with the University of Nevada, where the laboratories for seed analysis and plant pathology are maintained; with the Agricultural Extension Service in grasshopper and noxious weed control; and with the Nevada Agricultural Experiment Station in nearly all lines. In its emergency work in Mormon cricket control cooperation was with the WPA through its administrator; the Taylor Grazing Act administration, through the ECW camps; and the U. S. Forest Service. To these agencies much credit for the success of the work of the division is given. A summary of the operations of the various activities follows:

### QUARANTINES

Quarantine regulations are maintained to protect the State from the introduction of dangerous pests in the form of insects or plant diseases on incoming shipments, and for the control of pests already established in the State; also, to provide ways and means for meeting the quarantine regulations of other States in order that Nevada agricultural commodities may move in interstate commerce. In connection with the latter, where such products offered for shipment require inspections and certification, the service is provided by this division through deputy quarantine officers stationed in several of the counties of the State.

Much work was done during the biennium to relieve the farmers and shippers of the regulations imposed by other States on account of the presence of the alfalfa weevil in a great portion of Nevada. When weevils were first discovered in this State, drastic quarantines were issued by other States which hoped thereby to protect their agriculture from the ravages of this pest. Practically all of our exportable agricultural products were either excluded from outside markets entirely, or such burdensome restrictions were placed on shipments that it was almost impossible to compete with the products of other States. This division, after years of effort, has made considerable progress in convincing quarantine officials of other States that in many instances such weevil quarantines were unjustified and offered little, if any, safeguard

to their agriculture. Today most of Nevada's products are again moving freely in interstate commerce under certificates issued by the Department of Agriculture, stating that the commodity in question has been shipped under its direction and that all possible safeguards have been used to protect the shipment from contamination by alfalfa weevils.

Nevada maintains several quarantines which we feel are still justified as a protection to its agricultural interests. They are as follows:

*Colorado Potato Beetle Quarantine*, which prohibits the entry of potatoes into the State from all States infested with this insect pest, unless the potatoes are screened before shipment.

*Oriental Fruit Moth Quarantine*, which embargoes certain fruits, containers and nursery stock from States infested with this pest.

*European Corn Borer Quarantine*, which prohibits the movement into Nevada of corn and certain allied plants, cut flowers, fruits and vegetables from States now known to be infested with the European corn borer.

*Alfalfa Weevil Quarantine*, which prohibits the shipment of hay and straw and regulates the movement of other commodities into districts not now known to be infested with the alfalfa weevil. This quarantine is now becoming out of date and will shortly be materially revised or possibly abandoned entirely, as experience has shown, over a period of years, that it is of little value in protecting the agricultural interests of any State or in preventing the spread of the weevil in areas favorable to its propagation.

*Honey Bee Quarantine*, which prohibits the entry of bees on combs and used apiary equipment into the State, but makes provision for the shipment of bees in cages so that new apiaries may be established and losses to established apiaries may be overcome.

#### INSECT PESTS

The insect problem has been of paramount importance in Nevada during the biennium. An outbreak of Mormon crickets, which threatened for several years, occurred during the spring of 1935, necessitating drastic control measures if wide-spread damage was not to occur in several eastern and northern counties. Only \$1,200 of State funds were available for this purpose, and an appeal was made to the Federal Government for funds to purchase material and equipment. After some delay a grant of \$10,000 was made to the State and this entire amount was expended for insecticides and other needed supplies. A project was drawn up under the FERA, which supplied needed labor, and in June the campaign was under way. As many as 120 men were employed at the height of the campaign, which cost approximately \$34,998.31. Much good was accomplished and crop damage was held to a minimum. However, many eggs were deposited in the infested area and plans were laid to continue the control campaign during the spring of 1936.

Fear of a large increase in the cricket population in 1936 was justified, and by March the number of crickets that had hatched caused great alarm to residents of Elko County. Fortunately, plans formulated earlier could be placed in effect immediately and the campaign

started as soon as weather conditions permitted. A total of 320 men were employed in this work and the cost was \$123,013.15.\* This money was supplied by the WPA and the ECW, who worked with this department wholeheartedly. Crop damage was negligible, although in places the range plants suffered severely. A great many eggs have been deposited in some areas and unless biologic or climatic conditions intervene in the meantime, a serious outbreak of crickets may be looked for during the spring of 1937. The infested area increased this year and now includes Pershing and White Pine Counties. A bulletin describing the 1935 Mormon cricket campaign in detail has been published and a copy will be sent on request to anyone interested. A similar bulletin covering the 1936 campaign is in process of preparation and will be available for distribution later.

In addition to the cricket control campaign, it was necessary for the department to conduct a grasshopper control project in several Nevada counties. This project was a continuation of the work started in 1933, when widespread outbreaks of grasshoppers were reported from many sections of the State. Bait and poison were furnished by the U. S. Department of Agriculture and labor by the FERA and WPA. Technical supervision was supplied by the State Department of Agriculture. Poisoning of hoppers was carried on in Elko, White Pine, Lincoln, Lander, Eureka, Lyon, and Humboldt Counties. This work was successful, and much damage to hay and grain crops was averted by the timely application of poison bran mash. There were two species of grasshoppers involved in the most serious outbreaks, *Camnula pellucida* and *Melanoplus mexicanus*; other species of hoppers were present in lesser numbers but were not sufficiently numerous to cause damage.

In addition to conducting the cricket and grasshopper control campaign, it was necessary for the department's personnel to give considerable attention to other reports of insect damage to both crops and dwellings. Termites, which were a rarity in Nevada in the past, have for some reason become established in western Nevada, and there have been reports of several cases of severe damage to houses caused by this insect. In building new houses care should be exercised in seeing that the building is so constructed that wood does not come in contact with the earth, since, in order to survive, these insects must have access to moisture.

Numerous requests for assistance were received from residents who greatly feared the black widow spider. These calls came from all parts of the State, showing that this specie of spider is generally distributed throughout the country. Several persons reported that they had been bitten.

Alfalfa weevil damage was rather spotted during the biennium, but it was necessary to apply control measures in portions of Washoe and Lyon Counties. In all probability it will be necessary to carry on a large-scale control campaign in Douglas County in the spring of 1937, as the weevil population has been building up rapidly in that county for the past few years. Increases in weevil population were also observed in Lander and Elko Counties. Weevils were reported from Paradise Valley in Humboldt County for the first time in 1936.

The weevil parasite (*Bathyplectes curculionis*) has firmly established

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\*Figures from local WPA office, Elko, Nevada.

itself in all districts where alfalfa weevils are present. By actual counts of many thousand weevils, the percentage of parasites was found to be well over 90, while at times 100 percent of the early hatched weevils were parasitized. This condition probably accounts for the reduction of alfalfa weevils in many of the alfalfa-growing sections of the State.

#### ALFALFA HAY AND MEAL SHIPMENTS

After negotiation with the officials of California, a large area in the San Francisco Bay district was opened to the shipment of Nevada hay. The finding of alfalfa weevils in a portion of central California also opened a considerable area to which Nevada hay could be shipped under certain restrictions. This has been of great assistance to Nevada hay growers, as the livestock population being at a low ebb, the amount of surplus hay in the State increased yearly, bringing hay prices lower than the cost of production for a limited part of the year.

Since the opening of these markets in California, this past season, 390 cars of hay have been shipped, with the prospect that even a larger tonnage will be sold there during 1936. This has been most profitable, not alone for the growers but also to railroads and truckers, as well as laborers engaged in baling the hay and hauling it to railroad points.

During the biennium the movement of alfalfa in the form of meal has continued; there having been shipped 97,012 bags or approximately 4,900 tons from certified alfalfa meal mills.

#### PLANT DISEASES

No new plant disease has come to the attention of the department during the last biennium. The outstanding fungous disease, as measured by the number of requests for diagnosis during the biennium, is *Valsa sordida*, commonly known as poplar or willow canker. This disease is doing much damage to various species of poplar and willow. It appears to be particularly destructive to the Carolina poplar and to the several species of willow which are grown as ornamental and shade trees. A general survey of the trees of Reno indicated that approximately 40 percent of the poplars and willows are infected by this fungus. The disease attacks, also, the horse chestnut and the box elder.

In the past year the disease was found in Reno on an English walnut tree, which was killed to the ground by it. This is the first time this disease has been reported on this species of tree. No infection has thus far been found on the black walnut which seems to be immune.

Virus diseases of many cultivated plants, particularly ornamental plants, have been brought to our attention in greater frequency during the last two years. The usually prevalent infections by mildews, smuts, rusts, and *Fusariums* have been reported less frequently.

The most frequent plant troubles are those usually classified as physiological, that is, those due to dry air, excessive heat, or uncongenial soil. These troubles are always more severe during the latter part of a hot, rainless summer. The number of physiological diseases during the biennium has been approximately the same as in the previous biennium.

**NOXIOUS WEEDS**

In a report of the Western Plant Quarantine Board for 1933-1934, it is stated:

The rapid spreading of noxious weeds in the western States constitutes a real challenge to agriculture. The condition is so serious that many sections have to content themselves with living with these pests rather than ever hoping for their eradication. This condition can only mean a definite limit to the productivity of the land with a coupled decrease in crop production. When land becomes infested with these persistent noxious weeds its value depreciates at least to the extent of the cost of eradication. It is conservative to place this cost at from \$50 to \$150 per acre. In fact, eradication is so difficult that it is the exception rather than the rule where those weeds become well established.

In a study of important losses sustained by farmers, made by the United States Chamber of Commerce, and reported at a recent State and Regional Weed Conference held in the East, it was stated that erosion held first place in this list and weeds second.

The ways in which weeds caused losses to the farmer may be classed as follows:

1. Decrease the quality and yield of crops.
2. Cause extra labor and expense in cultivation and harvesting.
3. Crowd out desirable crops and often take the land completely.
4. Use the plant food and moisture needed by crops.
5. Poison and injure livestock.
6. Harbor insect pests and plant diseases.
7. Decrease values of land, hay, pasture, seed, and wool.
8. And, in Nevada at least, prevent the movement of certain agricultural commodities in interstate commerce.

In Nevada today, the increasing spread of certain noxious weeds has become the greatest problem the farmer has to face. These usurpers of some of the best agricultural lands have forced thousands of acres, once productive, off the tax roll because of being worthless from an agricultural standpoint. The more common and persistent noxious weeds Nevada has to contend with are:

1. White Top (*Lepidium draba*).
2. Canada Thistle (*Cirsium arvense*).
3. Puncture vine (*Tribulus terrestris*).
4. Russian knapweed (*Centaurea repens*).
5. Wild morning glory or bindweed (*Convolvulus arvensis*).

To a great many farmers, a weed is just a weed, and no attention was paid to them until hundreds of acres had been taken by them and were lost for a productive crop. In the enforcement of the Noxious Weed Act, this department has endeavored to do all its time and facilities permitted. The best results were accomplished in counties where the work was carried on under county supervision, but in other counties work has not been as active as was desirable, owing to the tendency

on the part of some county officials and farmers to wait until a Federal subsidy has been provided to assist in carrying the costs. The Soil Conservation Act makes provisions for the payment of certain sums for the control of weeds, and it is presumed that this will serve as an incentive to again start active campaigns.

Any control program that is to be effective must be preceded by a careful and well-planned educational campaign to convince farmers of the need of not allowing noxious weeds to become thoroughly established. A weed-control program, furthermore, is not simply a community problem, it should be at least State, if not National, in scope, because the losses caused by the neglect of control are enormous. So far little work of a research nature as to best methods of control has been done by any of the experiment stations or research institutions. Any weed control program to be really effective should be based upon some such scientific research followed by an educational program to stimulate farmers and State and county officials to encourage their control and if possible final eradication.

White top (*Lepidium draba*) is considered the greatest menace among the weeds of Nevada. It has spread to practically every county in patches ranging from a few feet in area to whole fields. Work in its eradication by means of chemicals, cultivation and flooding have been carried on for years, and while in some areas the control has been considered good, in others the weed persists and continues to spread.

Puncture vine (*Tribulus terrestris*) an annual weed which has caused much damage in neighboring States, is being carried into this State frequently, and infestations have been found in practically every community in northern and western Nevada in addition to its more common presence in southern Nevada. The weed, however, is being controlled by the eradication of the plants before they are allowed to mature. In control work, this department has had the cooperation of county officials, CCC camps, and the railroads.

In southern Nevada, particularly, wild morning glory (*Convolvulus arvensis*) is a menace to two young and important industries now becoming established there; the growing of tomato plants and the production of sugar beet seed. States receiving these plants and seed require that they be certified to as being free of noxious weed seed, and in particular wild morning glory. This inspection and certification has been arranged for through this department in cooperation with the officials of the county concerned, who provide for the payment of an inspector for this work. In addition, certain States that do not maintain a quarantine against Nevada hay on account of the alfalfa weevil, do require certification that the hay is free of noxious weed seeds and propagating parts of weed plants.

An infestation of Canada thistle was reported in western Nevada and is being controlled by flooding, the availability of a constant water supply and the nature of the land making this form of control feasible in this particular case.

Three infestations of yellow star thistle were discovered by the department in Washoe County in 1935, and measures have been taken to eradicate these weeds before they had a chance to spread. In this control work the department had the cooperation of the county,

through the deputy quarantine officer, and the aid of number of WPA laborers. All living plants were destroyed and burned, but as many of the plants had reached maturity before being discovered, seeds were scattered over a large area, necessitating control work the following year. This infestation doubtless became established through the planting of seeds contaminated with seeds of this serious weed pest.

A small infestation of leafy spurge was found in Elko County, and this is the first time this weed has been reported in Nevada. The infestation was taken care of and eradicated.

Plans are under way by which the State Department of Agriculture, cooperating with the State Farm Bureau, will draft a weed control project that will come under the regulations necessary to secure Federal aid through WPA administration. One plan, which had already been presented by the Department at the request of the State Planning Board, was rejected on account of the excessive differential between material, equipment, and labor costs. The proposed new project will be drawn so as to bring it within the necessary requirements, although in some counties a shortage of labor may lessen the efficiency of the work.

Repeated efforts have been made by the State Farm Bureau and this department to have the U. S. Department of Agriculture take cognizance of the need of research work on the weed problem as applicable to the western States, and a request has been presented to establish a research project in Nevada where the various weeds present and the wide climatic range would make such a project of great benefit to this as well as other western States. It is strongly hoped that some of the efforts being made will materialize within the coming biennium, and that a concerted move will be possible to reclaim some of the agricultural lands now out of use and to prevent more acres from becoming lost to productivity and to revenue to the State, as the losses resulting from the wide spread of certain of these noxious weeds fall, not alone on the farmer, but on the State as a whole.

#### AGRICULTURAL SEED CONTROL

The analysis of agricultural seed offered in the State in packages of one pound or more has been actively continued during the biennium. This service has been of great aid to the farmers and dealers of the State, as those taking advantages of the service offered have insured themselves against the purchase and planting of inferior seed, and seed contaminated with noxious weeds. All of the larger seed dealers of the State are active cooperators, and voluntarily send in their samples for testing, and buy only seed that analysis shows to be of the highest quality. Farmers in purchasing seed should buy only from dealers who have had their seed analyzed, as they are then assuring themselves that their lands are not becoming infested with noxious weeds through the planting of impure seed.

During the biennium 320 samples of seed were either sent to the department voluntarily or were taken by our inspectors for analysis. The various samples of seed tested and the results given are listed in the following table:

**GERMINATION AND PURITY TESTS OF SEED SAMPLES**  
**1935-1936 SEASONS**

Sample	Number	PURITY, PERCENT			GERMINATION, PERCENT		
		High	Low	Avg.	High	Low	Avg.
Alfalfa .....	90	100.00	81.40	98.86	98.75	44.00	74.89
Barley .....	26	99.99	83.32	96.57	100.00	59.50	96.51
Clover .....	29	100.00	72.00	97.24	89.50	31.25	71.33
Grass .....	66	99.99	65.00	96.03	97.00	49.50	75.14
Oats .....	30	99.80	84.30	95.00	99.00	73.00	85.87
Rye .....	4	97.50	92.06	95.67	98.00	81.25	92.95
Sesbania .....	1	100.00	.....	100.00	99.50	.....	99.50
Timothy .....	7	100.00	95.00	98.60	97.00	83.75	89.81
Wheat .....	64	100.00	89.80	97.88	100.00	82.50	96.53
Carrots .....	1	95.00	.....	95.00	.....	.....	.....
Onions .....	2	100.00	100.00	100.00	92.00	74.00	83.00
Spinach .....	1	99.80	.....	99.80	52.00	.....	52.00

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Weed seeds found in the above samples were as follows: Amaranth, alkali grass, barnyard grass, bouncing bet, bull thistle, bulrush, bunt, catchfly, chickweed, cinquefoil, common sorrel, crabgrass, dandelion, darnel, dock, dodder, dog fennel, foxtail, field sorrel, germ plant, lamb's quarters, lupine, mallow, marsh grass, morning glory, mustard, peppergrass, phalaris, pigweed, plantain, polygonum, potentilla biennis, prickly poppy, rush grass, Russian thistle, saltbush, saltgrass, sedge, shepherd's purse, smart weed, sorrel, sour dock, spike rush, stinking smart, sunflower, and yarrow.

**CERTIFIED SEED**

A total of sixteen acres of Netted Gem potatoes have been certified for seed during the biennium. Several growers who previously asked for this service have discontinued the production of potatoes. This is an industry that should bring a considerable income to Nevada, as very few States can grow the quality of seed produced in some of our counties. It is difficult, however, to get farmers interested, possibly because of the added care necessary in growing certified crops.

Certification of grain has continued to be a popular project in several counties. A total of 35 acres of oats and wheat were certified during the past biennium.

Certified seed usually brings from \$10 to \$20 per ton more than common seed.

**CERTIFICATION OF TOMATO PLANTS AND SUGAR BEET SEED**

A new service of the department was inaugurated during the biennium when the State of Utah demanded that all tomato plants shipped from Nevada be accompanied by a certificate stating they had been inspected and found to be free of morning glory or other noxious weed roots. The magnitude of this work can be appreciated when it is known that over thirty-six million young tomato plants were shipped to other States during the past two years. These plants were shipped into the States of California, Utah, Idaho, Wyoming, Colorado, and Nebraska. This industry brings many thousands of dollars to southern Nevada each year.

The growing of sugar beet seed has also reached sizable proportion in Clark County, and many acres of sugar beets are now grown there to supply the beet-growing sections of the West with United States

grown beet seed. Formally all sugar beet seed was imported from Germany, but owing to the long growing season in southern Nevada it has been demonstrated that beet seed can be matured there in one year, while in other sections it takes two growing seasons. This makes it possible for Nevada to compete with cheaply produced foreign seed and brings much ready cash into the State. The State of Utah insists that these beet seed fields be under the supervision of the State Department of Agriculture and that all noxious weeds be destroyed before harvest, and only under these conditions are these seeds allowed to be sold in the State of Utah, where practically all of it is purchased by the sugar mills.

#### STANDARDIZATION AND GRADING OF AGRICULTURAL PRODUCTS

The standardization and grading of agricultural products has been of immense benefit to the growers of the State during the biennium, as many thousand tons of hay were sold after being graded by the department. This hay could not have been sold otherwise, as the buyers would purchase only on official grades.

The number of grades given vegetables and fruits during the biennium was not as great as during the past biennium, but under a new California law, which requires all fruit and vegetables to be labeled with their true grade, it will be necessary for the shippers to call for this service, as all of these commodities not properly labeled will not be admitted into the State of California, whose market absorbs practically all surplus Nevada produce.

The grading of turkeys has been carried on successfully the past two years and a great percentage of the birds shipped to outside States are being graded yearly by this department and sold on the certificate issued. Our inspectors are given an examination each year, and only those with high passing grades are licensed as Federal-State graders.

A total of approximately 70,280 turkeys were produced in Nevada during the biennium. Of this amount 71.2 percent, or 49,914 birds, were sold under Federal-State grade. This indicates the increasing demand now being made for this service as compared with the year 1933, when only 58 percent of the production was shipped under grade. Since producers and shippers have taken advantage of this service, the loss to them caused by unscrupulous dealers has been small. The dissatisfied dealer must now prove the product to be below grade before he can demand a price reduction. Turkey shippers are no longer risking losses they formerly were required to take when dealers docked them because of alleged poor quality.

#### DISTRIBUTION OF GRADED TURKEYS BY SHIPPING POINTS

Shipping point	1934-1935		1935-1936	
	Birds	Weight	Birds	Weight
Battle Mountain .....	2,038	30,080		
Fallon .....	14,832	200,054	14,792	200,030
Lovelock .....	1,848	29,349	954	14,704
Reno .....	1,200	16,800	1,055	12,114
Yerington .....	6,265	84,504	6,930	89,444
Totals .....	26,183	360,787	23,731	316,292

## TURKEY PRODUCTION IN NEVADA SINCE 1933

Season	ESTIMATED PRODUCTION		TOTAL GRADED		Percent graded by birds
	Birds	Weight	Birds	Weight	
1933-1934.....	42,936	571,879	25,036	344,226	58
1934-1935.....	34,683	469,787	26,183	360,787	75.5
1935-1936.....	35,597	482,416	23,731	316,292	66.6

In addition to the above, the following products moved to outside markets under Federal-State grade certificates:

Cantaloupes.....	26 cars
Hay.....	93 cars
Onions.....	6 cars

## HONEY GRADING

The cooperative agreement between the State Apiary Commission and the Division of Plant Industry, by which all samples of honey submitted are given official color grades, was continued during the biennium and proved of great value to the honey producers in disposing of their crop on a cash basis. During the biennium 278 samples of honey were passed upon and certificates of color grade issued for same.

## BUTTER GRADING

The department assisted the creameries of Nevada in meeting the new California law requiring all butter offered the retail trade to be labeled as to its true grade and quality. A large tonnage of Nevada butter is marketed in California, and when the California law became effective no provisions had been made by the Nevada creameries to meet its requirements. Two meetings were held, the first being attended by only Nevada creamery men and officials, where an outline of the law was discussed. Later a meeting of the creamery men with representatives of the California Department of Agriculture, the U. S. Bureau of Agricultural Economics, and this department was held. A decision was reached whereby samples of butter from each creamery were to be submitted twice each month to the San Francisco office of the U. S. Bureau of Agricultural Economics, where an official test would be made, this test to be accepted by the California authorities, allowing the sale of the butter on the same basis as the California manufactured product.

The plan to date has worked satisfactorily, but Nevada should take cognizance of the situation and pass a law similar to the California law, or this State will become the dumping ground for butter that will not be salable elsewhere.

## EGG GRADING

The 1934 session of the Legislature made available the sum of \$600 annually to administer the Egg Grading Law throughout Nevada, no appropriation having been made for this purpose during the previous biennium. A careful survey of the situation seemed to show quite clearly that this sum would not be adequate to provide anything like efficient enforcement of the Act on a reasonably uniform basis throughout the State.

In order, therefore, to avoid sectional complaints as to favoritism, it was decided not to expend any of this appropriation. As an alternative, the policy was adopted of having the various inspectors representing the department check up on the eggs offered for sale throughout the State to the best extent that opportunity permitted incident to their other work. Washoe County, in addition, provided the part-time services of a man to check the eggs offered for sale in the Reno district.

Owing to favorable marketing conditions, this plan worked fairly well; but it probably cannot be counted on to give satisfaction over any reasonably long period of time, owing to changes in marketing conditions which might result in the flooding of the Nevada markets with inferior eggs from out of the State and the consequent demoralization of the market for Nevada producers and consumers. Owing to the market and active interest shown in the enforcement of this law by Nevada producers, dealers and consumers of eggs, it is suggested that at least provisional appropriations for its adequate enforcement, in case need should arise between sessions of the Legislature, might well be considered by that body.

#### MEETINGS AND CONFERENCES

Nevada holds membership in certain national and regional associations which consider and adopt policies applicable to certain matters relating to all States and to certain groups of States. Among the more important of these are the Western Plant Quarantine Board, comprised of representatives of the eleven western States, and the National Association of Commissioners, Secretaries and Departments of Agriculture. It is only fitting that Nevada should participate in the deliberations and have a voice in the final actions of these associations, as it could be possible that, if not represented, action might be taken unknown to the State which would later become a burden or at least be undesirable.

Under an agreement with the Bureau of Agricultural Economics of the U. S. Department of Agriculture, it is required that inspectors, licensed to issue Federal-State certificates of grade for certain agricultural products, attend schools of instruction and later pass an examination leading to such licensing.

The following meetings, conferences and schools were attended by representatives of the Division of Plant Industry during the biennium just closed:

August 31, 1934, a conference of the leaders of the western States interested in grasshopper control, held at Denver, Colorado.

October 13-16, 1934, the annual meeting of the National Association of Commissioners, Secretaries and Departments of Agriculture, held at Chicago, Illinois.

December 12, 1934, a hay-grading school held at Portland, Oregon.

May 21-24, 1935, the annual meeting of the Western Plant Quarantine Board, held at Sacramento, California.

September 30-October 1, 1935, the annual turkey-grading school, held at Salt Lake City, Utah.

November 8, 1935, a conference of representatives of eight western

States with representatives of several Federal agencies, including the U. S. Bureau of Entomology and Forest Service, to consider Mormon cricket control, held at Salt Lake City, Utah.

February, 1936, a conference with officials of the California Department of Agriculture and Southern and Western Pacific Railroad representatives, concerning a modification of the California alfalfa weevil quarantine for the purpose of opening up markets for Nevada hay, held at Sacramento, California.

March 9-11, 1936, a conference with representatives of the Federal Government and Department of Agriculture officials of the western States, to consider a soil conservation program, held at Salt Lake City, Utah.

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